UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

July 7, 2016

(b) (6) [redacted]
103 Lyon Drive
Grenada, Mississippi 38901

SUBJECT: Results of May 2016 Air Monitoring at 103 Lyon Drive, Grenada, MS

Dear (b) (6) [redacted]

Thank you for allowing the U.S. Environmental Protection Agency (EPA) to monitor the air inside your home located at 103 Lyon Drive, Grenada, MS. We also appreciate speaking to you both in-person (at your home) on the morning of May 5, 2016 and also during three follow-up telephone calls that were held on Friday, May 13, 2016, Friday, June 24, 2016 and Monday, June 26, 2016 to discuss your results. The purpose of collecting the air samples was to determine whether contaminants are present in air that may be related to Grenada Manufacturing, LLC (the Facility) and to evaluate if any further response actions are necessary to protect human health and the environment. The EPA used its Trace Atmospheric Gas Analyzer (TAGA) bus, which is a mobile air monitoring laboratory. This was part of a broader EPA investigation of potential vapor intrusion impacts in Eastern Heights from the Facility. The sampling was necessary to evaluate whether contamination, primarily the solvent trichloroethylene, TCE, may be entering your home in the form of a gas (or vapor) from contaminated groundwater beneath your home. This process is also called "vapor intrusion." For general information about vapor intrusion, a document entitled, "What You Should Know about Vapor Intrusion" is enclosed for your reference.

The EPA collected air from inside your home and from beneath the foundation slab (called sub-slab air) of your home on May 4-5, 2016. The EPA screened the air in your home using the TAGA sampling tube and collected a sub-slab air sample in a tedlar bag. The indoor air collected during the screening and the sub-slab air sample were analyzed by instruments within the mobile air monitoring laboratory on the TAGA bus. Also, the indoor air sample and sub-slab air sample were collected from this home using summa canisters. The EPA is writing this letter to you to share the results of this air sampling.

Data Summary

Indoor Air: Although TCE was not detected in indoor air, **benzene, ethylbenzene and 1,2-dichloroethane were detected in the indoor air** at levels that exceed the EPA's indoor air regional screening levels. Regional screening levels are values used by the EPA to determine if a contaminant should be considered for further evaluation. In the case of your home, benzene was detected during the indoor air screening as well as from the indoor air sample collected via

meter (ug/m^3). Ethylbenzene and 1,2-dichloroethane were also detected in indoor air at 2.5 ug/m^3 and 2 ug/m^3, respectively.

The three chemicals (benzene, ethylbenzene and 1,2-dichloroethane) detected in the indoor air of your home were not found in the air beneath your slab (see Sub-Slab Air results), and therefore are unlikely to be originating from an underground source. It is important to know that these contaminants can be present in and around homes from common household products (glues, paints, art supplies, ink) and gasoline.

The most common use of 1,2-dichloroethane is in the production of vinyl chloride, which is used to make a variety of plastic and vinyl products including polyvinyl chloride (PVC) pipes, furniture and automobile upholstery, wall coverings, housewares, and automobile parts. Benzene is used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include emissions from forest fires, crude oil, gasoline, and cigarette smoke. Similarly, ethylbenzene is used to make products such as inks, pesticides, and paints. Natural sources of ethylbenzene include coal tar and petroleum.

Sub-Slab Air: No contaminants were found above EPA's screening levels in the air beneath the foundation slab of your home (referred to as sub-slab air or soil gas). Based on the results from the air beneath your home, the EPA can conclude that no chemicals, including benzene, ethylbenzene, and 1,2-dichloroethane are entering your home from a below-ground source, such as groundwater.

Outdoor Air: Outdoor (or "ambient") air samples were collected outside of your home and in several other locations within the Eastern Heights neighborhood. Low levels of benzene were found in the outdoor air samples, most likely due to automobile exhaust. The benzene found inside of your home does not appear to be coming from the outside air.

Conclusion: As we explained before, although we were not able to pinpoint the source of benzene during the investigation, the EPA still suspects that there may be a source of benzene inside your home. The detections of benzene may be related to flooring, glues, cigarette smoke, paint, or other sources in your home. Also, as we shared, based upon our assessment, the benzene in your home is likely not related to the Facility, which the EPA continues to investigate and conduct corrective action. At the briefing in your home and during our follow-up calls, the EPA recommended increasing the flow of air through your house by ventilating your home. Ventilating your home, by opening windows and/or running the attic fan and air conditioner, will reduce the amount of benzene in your home by exchanging the indoor air with the outdoor air.

Results Table

The following table is a summary of the results from the air inside your home which includes TCE and the other chemicals detected above the EPA's regional screening levels. The complete laboratory data sheets are provided as an enclosure and are accompanied by a table containing the relevant screening levels for the chemicals detected.

Results Sample location: 103 Lyon Drive Sample date: 5/4-5/2016		
Chemical Name	**EPA Indoor Air Regional Screening Levels**	**Indoor Air* Sample from your home**
Trichloroethylene	0.48	Not Detected
Benzene	0.36	**57**
1,2-dichloroethane	0.11	**2.0 (estimated)**
Ethylbenzene	1.1	**2.5**
Notes: Concentrations are in $\mu g/m^3$- micrograms per cubic meter. **Bold** – Indicates value is above the EPA regional screening level. The indoor air was collected over a 24-hour period via summa canister.		

The EPA will contact you to schedule a time to collect another indoor air sample and sub-slab air sample to determine whether ventilating and exchanging the indoor air with the outdoor air in your home has reduced the amount of benzene. The EPA staff will also contact you to discuss this letter and/or any questions you may have about the results and the future sampling. If you have any questions or would like additional information, please feel free to contact Brian Bastek, RCRA Project Manager at (404) 562-8511 or bastek.brian@epa.gov, or Brian Holtzclaw, RCRA Community Engagement Coordinator at (404) 821-0697 or holtzclaw.brian@epa.gov.

Sincerely,

Michael A. Norman, Chief
RCRA Cleanup and Brownfields Branch
Resource Conservation and Restoration Division

cc: Willie McKercher, MDEQ
Reid Stanford, Esq.

Enclosures (3)

Enclosure 1

What You Should Know about Vapor Intrusion

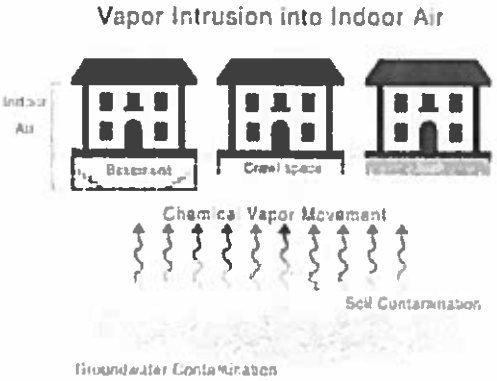
EPA
United States
Environmental Protection
Agency

What You Should Know About Vapor Intrusion

EPA has developed this fact sheet to answer some of the most commonly asked questions about an important health issue called vapor intrusion. Vapors and gases from contaminated groundwater and soil have the potential to seep into indoor spaces and cause health problems.

What is vapor intrusion?

When chemicals or petroleum products are spilled on the ground or leak from underground storage tanks, they can give off gases, or vapors that can get inside buildings. Common products that can cause vapor intrusion are gasoline or diesel fuel, dry cleaning solvents and industrial de-greasers. The vapors move through the soil and seep through cracks in basements, foundations, sewer lines and other openings. Vapor intrusion is a concern because vapors can build up to a point where the health of residents or workers in those buildings could be at risk. Some vapors such as those associated with petroleum products have a gasoline odor, others are odor-free.



Can vapors in my home come from household sources?

Common household products can be a source of indoor air problems. Vapors and gases can come from: paints; paint strippers or thinners; moth balls; new carpeting and furniture; stored fuel; air fresheners; cleaning products; dry cleaned clothing and even cigarette smoke.

What are the health concerns related to vapor intrusion?

When vapor intrusion does occur, the health risk will vary based on the type of chemicals, the levels of the chemical found, the length of exposure and the health of exposed individuals. Some people may experience eye and respiratory irritation, headaches and/or nausea. These symptoms are temporary and should go away when the vapors are addressed. Low-level chemical exposures over many years may raise the lifetime risk of cancer or chronic disease.

How is vapor intrusion discovered?

Samples of gas in the soil or groundwater are first collected near a contaminated site. If no contamination is found near a site, then vapor intrusion should not be a problem. If contamination is found, depending on the type, the search may be widened to include samples closer to or on individual properties. The next step is to take vapor samples from the soil under the home's foundation; these are called slab, or sub-slab samples. EPA does not generally recommend indoor air sampling before slab or sub-slab sampling, because indoor air quality varies widely day to day. Also, household products may interfere with sampling results.

What happens if a problem is found?

The most common solution is to install systems often used to reduce naturally occurring radon that seeps into homes in some geographic areas. These systems, called radon mitigation systems, remove soil vapors from below basements or foundations before they enter homes. Vapors are vented outside of the homes where they become dispersed and harmless. These systems use minimal electricity and do not affect heating and cooling efficiency. They also prevent radon from entering homes – an added health benefit especially in radon prone areas. Once the source of the vapors is eliminated, the systems should no longer be needed.

Vapor Intrusion: Tightly seal common household products after use and seal them in an area that is well ventilated to avoid the release of vapors

What can I do to improve indoor air quality?

- Don't buy more chemicals than you need.
- Store unused chemicals in appropriate tightly-sealed containers.
- Don't make your home too air tight. Fresh air helps prevent chemical build-up and mold growth.
- Fix all leaks promptly, as well as other moisture problems that encourage mold.
- Check all appliances and fireplaces annually.
- Test your home for radon. Test kits are available at hardware and home improvement stores or you can call the Radon Hotline at 800-458-1158 in New York State, or 800-648-0394 in New Jersey.
- Install carbon monoxide detectors in your home. They are available at hardware and home improvement stores.

Sub-slab mitigation system: This system draws radon and other vapors out of the soil and vents them outside

For more information:

- For health related questions regarding vapor intrusion, contact your local health department or the federal Agency for Toxic Substances and Disease Registry at: 1-888-422-8737 or visit their Web site at www.atdsr.cdc.gov

- For more detailed information on EPA's vapor intrusion sampling, visit the EPA's Web site at: www.epa.gov/correctiveaction/eis/vapor/guidance.pdf

- For more information on indoor air quality, visit EPA's Web site at: www.epa.gov/air/topics/comoria.html or call the indoor air Quality Information hotline at 1-800-438-4318

Enclosure 2

Summary Table of Screening Levels for Chemicals Detected and Laboratory Data Sheets

Enclosure #2

Summary Table of Screening Levels for Chemicals Detected in Indoor Air and Sub-slab air samples

Residential Air Screening Table for the Grenada Manufacturing Facility		
Contaminants	**RSL(ug/m^3)***	**Sub-slab(ug/m^3)***
Benzene	0.36	12
Chloroform**	10	330
1,2-Dichloroethane	0.11	3.6
1,2-Dichloroethene***	7.3	243
Ethylbenzene	1.1	37
Toluene	5200	170,000
Tetrachloroethene	11	360
Trichloroethene******	0.48	16
Xylene	100	3500
NOTES:		
RSL - EPA's Regional Screening Level for residential air		
Sub-slab - RSLs adjusted for attenuation thru a concrete slab.		
*Screening levels are based on HI=1 or 1x10e-6, unless otherwise noted.		
**Based on HI=0.1 because of chloroform being a threshold carcinogen.		
***Based on non-cancer toxicity of 1,2-DCA.		
****Also known as trichloroethylene		
All Screening Levels are reported in micrograms per cubic meter, ug/m^3		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 16-0152
Project: 16-0323, Grenada Manufacturing - Reported by Sallie Hale

Volatile Organics

Project: 16-0323, Grenada Manufacturing

Sample ID: GM1231A0516 **Lab ID:** E162001-52
Station ID: GM123 **Matrix:** Indoor Air

Date Collected: 5/4/16 13:30

CAS Number	Analyte	Results Qualifiers	Units	MDL / MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	3.9 J, Q-2	ug/m3	0.49 / 4.9	5/11/16 11:21	5/20/16 3:52	EPA TO-15
79-00-5	1,1,2-Trichloroethane	3.1 U	ug/m3	0.31 / 3.1	5/11/16 11:21	5/20/16 3:52	EPA TO-15
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	2.1 U	ug/m3	0.21 / 2.1	5/11/16 11:21	5/20/16 3:52	EPA TO-15
95-63-6	1,2,4-Trimethylbenzene	0.58 J, Q-2	ug/m3	0.28 / 2.8	5/11/16 11:21	5/20/16 3:52	EPA TO-15
107-06-2	1,2-Dichloroethane	2.0 J, Q-2	ug/m3	0.29 / 2.2	5/11/16 11:21	5/20/16 3:52	EPA TO-15
71-43-2	Benzene	57	ug/m3	0.18 / 1.8	5/11/16 11:21	5/20/16 3:52	EPA TO-15
67-66-3	Chloroform	0.90 J, Q-2	ug/m3	0.27 / 2.7	5/11/16 11:21	5/20/16 3:52	EPA TO-15
156-59-2	cis-1,2-Dichloroethene	0.28 J, Q-2	ug/m3	0.22 / 2.2	5/11/16 11:21	5/20/16 3:52	EPA TO-15
100-41-4	Ethyl Benzene	2.5	ug/m3	0.24 / 2.4	5/11/16 11:21	5/20/16 3:52	EPA TO-15
75-09-2	Methylene Chloride	1.9 U	ug/m3	1.9 / 1.9	5/11/16 11:21	5/20/16 3:52	EPA TO-15
95-47-6	o-Xylene	1.3 J, Q-2	ug/m3	0.25 / 2.5	5/11/16 11:21	5/20/16 3:52	EPA TO-15
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.8 U	ug/m3	0.38 / 3.8	5/11/16 11:21	5/20/16 3:52	EPA TO-15
108-88-3	Toluene	14	ug/m3	0.21 / 2.1	5/11/16 11:21	5/20/16 3:52	EPA TO-15
156-60-5	trans-1,2-Dichloroethene	2.3 U	ug/m3	0.23 / 2.3	5/11/16 11:21	5/20/16 3:52	EPA TO-15
79-01-6	Trichloroethene (Trichloroethylene)	3.0 U	ug/m3	0.30 / 3.0	5/11/16 11:21	5/20/16 3:52	EPA TO-15
75-01-4	Vinyl chloride	1.4 U	ug/m3	0.14 / 1.4	5/11/16 11:21	5/20/16 3:52	EPA TO-15

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 16-0152
Project: 16-0323, Grenada Manufacturing - Reported by Sallie Hale

Volatile Organics

Project: 16-0323, Grenada Manufacturing

Sample ID: GM123SS0516 **Lab ID:** E162001-53

Station ID: GM123 **Matrix:** Soil Gas

Date Collected: 5/4/16 12:40

CAS Number	Analyte	Results	Qualifiers	Units	MDL / MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	3.9	U	ug/m3	0.39 / 3.9	5/11/16 11:24	5/26/16 5:54	EPA TO-15
79-00-5	1,1,2-Trichloroethane	2.5	U	ug/m3	0.25 / 2.5	5/11/16 11:24	5/26/16 5:54	EPA TO-15
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	1.7	U	ug/m3	0.17 / 1.7	5/11/16 11:24	5/26/16 5:54	EPA TO-15
95-63-6	1,2,4-Trimethylbenzene	2.2	U	ug/m3	0.22 / 2.2	5/11/16 11:24	5/26/16 5:54	EPA TO-15
107-06-2	1,2-Dichloroethane	1.8	U	ug/m3	0.23 / 1.8	5/11/16 11:24	5/26/16 5:54	EPA TO-15
71-43-2	Benzene	0.65	J, Q-2, QR-2	ug/m3	0.14 / 1.4	5/11/16 11:24	5/26/16 5:54	EPA TO-15
67-66-3	Chloroform	0.63	J, Q-2, QR-2	ug/m3	0.21 / 2.1	5/11/16 11:24	5/26/16 5:54	EPA TO-15
156-59-2	cis-1,2-Dichloroethene	1.8	U	ug/m3	0.18 / 1.8	5/11/16 11:24	5/26/16 5:54	EPA TO-15
100-41-4	Ethyl Benzene	1.9	U	ug/m3	0.19 / 1.9	5/11/16 11:24	5/26/16 5:54	EPA TO-15
75-09-2	Methylene Chloride	1.5	U	ug/m3	0.16 / 1.5	5/11/16 11:24	5/26/16 5:54	EPA TO-15
95-47-6	o-Xylene	2.0	U	ug/m3	0.20 / 2.0	5/11/16 11:24	5/26/16 5:54	EPA TO-15
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.66	J, Q-2	ug/m3	0.30 / 3.0	5/11/16 11:24	5/26/16 5:54	EPA TO-15
108-88-3	Toluene	0.42	J, Q-2	ug/m3	0.17 / 1.7	5/11/16 11:24	5/26/16 5:54	EPA TO-15
156-60-5	trans-1,2-Dichloroethene	1.8	U	ug/m3	0.18 / 1.8	5/11/16 11:24	5/26/16 5:54	EPA TO-15
79-01-6	Trichloroethene (Trichloroethylene)	2.4	U	ug/m3	0.24 / 2.4	5/11/16 11:24	5/26/16 5:54	EPA TO-15
75-01-4	Vinyl chloride	1.1	U	ug/m3	0.11 / 1.1	5/11/16 11:24	5/26/16 5:54	EPA TO-15

Enclosure 3

Agency for Toxic Substances and Disease Registry (ATSDR)

Follow-up Information and Additional Resources

Benzene Toxicological Frequently Asked Questions or ToxFAQs for Benzene is attached.

Use the following link to access the document online,
http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=14.

A link to ATSDR's Medical Management Guidelines for Benzene is provided as a another resource, http://www.atsdr.cdc.gov/mmg/mmg.asp?id=35&tid=14.

Additionally, please direct any health questions from your physician to the MS Poison Control Center.

1. Mississippi Poison Control Center/ University of Mississippi Medical Center
   https://www.umc.edu/Administration/Outreach_Services/Mississippi_Poison_Control_Center/Patient_Referral_and_Consult_Service.aspx
   Dr. Robert Cox
   Medical Toxicologist
   (601) 984-5577

Benzene - ToxFAQs™

CAS # 71-43-2

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHTLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 1,000 of the 1,684 National Priority List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is benzene?

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and other synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include emissions from volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.
- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Vapors (or gases) from products that contain benzene, such as glues, paints, furniture wax, and detergents, can also be a source of exposure.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Working in industries that make or use benzene.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection. Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries, but we do not know for certain that benzene caused the effects. It is not known whether benzene will affect fertility in men.

Benzene

CAS # 71-43-2

How likely is benzene to cause cancer?

Long-term exposure to high levels of benzene in the air can cause leukemia, particularly acute myelogenous leukemia, often referred to as AML. This is a cancer of the bloodforming organs. The Department of Health and Human Services (DHHS) has determined that benzene is a known carcinogen. The International Agency for Research on Cancer (IARC) and the EPA have determined that benzene is carcinogenic to humans.

How can benzene affect children?

Children can be affected by benzene exposure in the same ways as adults. It is not known if children are more susceptible to benzene poisoning than adults.

Benzene can pass from the mother's blood to a fetus. Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How can families reduce the risks of exposure to benzene?

Benzene exposure can be reduced by limiting contact with gasoline and cigarette smoke. Families are encouraged not to smoke in their house, in enclosed environments, or near their children.

Is there a medical test to determine whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is a test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood; however, since benzene disappears rapidly from the blood, this test is only useful for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. The metabolite S-phenylmercapturic acid in urine is a sensitive indicator of benzene exposure. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 5 parts benzene per billion parts of water (5 ppb).

The Occupational Safety and Health Administration (OSHA) has set limits of 1 part benzene per million parts of workplace air (1 ppm) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR) 2007. Toxicological Profile for Benzene (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30333.

Phone: 1-800-232-4636

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.